

802.15.4-Modem PAN4561H



OUTLINES - ENWC9A22xxEF

The PAN4561H module is a long range, low power, 2.4 GHz ISM band transceiver which includes a complete 802.15.4 physical layer (PHY) modem, designed for the IEEE 802.15.4 wireless standard and a appropriate microcontroller (MCU) with reference oscillator which provides a cost effective solution for long range data links and networks.

The RF frontend consists of a power amplifier (PA) and a low-noise amplifier (LNA) for extended range.

This module will comply to EN300328, FCC CFR Part 15 and ARIB STD-T66

FEATURES

- small size (35mm x 15mm x 3.8mm)
- 3 antenna options: Single port 50Ω, ceramic antenna or plug
- 16 selectable Channels with 250 kbps in the 2.4 GHz band
- Low power modes for increased battery life
- High sensitivity of -102 dBm typ. at 1% Packet Error Rate
- 20 dBm max. output power programmable over a 30 dB range
- Low supply voltage (2.7 V to 3.3 V, 3.0 V typ.)
- Operating temperature range -40°C to +85°C
- Link Quality and Clear Channel Assessment capability
- 60k Flash and 4k RAM memory
- two UARTs and one I²C bus
- 8 channel A/D converter with 10 Bit for fast and easy conversion from analog inputs -such as temperature, pressure and fluid levels- to digital values.
- 5 channel 16 Bit timer/pulse width modulation (TPM) outputs
- BDM port for direct download programming
- In total 37 digital I/O lines with programmable pull-ups and few with high-current driver.

APPLICATIONS

- Remote control and wire replacement in industrial systems such as wireless sensor networks
- Factory / home automation and motor / lighting control
- Inventory management and RF ID tagging and AMR
- Monitoring (environmental, patient or fitness)

MODULES | **WIRELESS**
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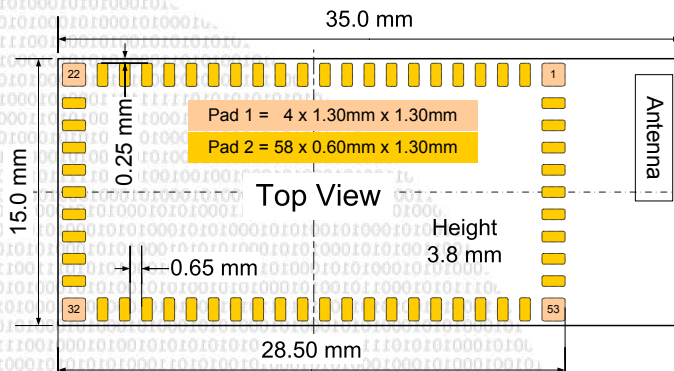
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DIMENSIONS



Note:

The pin names of the module and the internal MC1321x names fit to each other.
All unmentioned pins are not connected and must be left open.

TECHNICAL CHARACTERISTICS

Pin no.	Pin name	Pin no.	Pin name
1, 22, 32, 56 to 62	GND	27	/Reset
2 to 5	TPM2CH1-4 (PTD4-7)	28	CLKO
6	TPM1CH2 (PTD2)	29	GPIO2
8	UART2 TxD (PTC0)	30	BKGD/MS (PTG0)
9	UART2 RxD (PTC1)	31	GPIO1
10	I ² C SDA1 (PTC2)	33	VDDA
11	I ² C SCL1 (PTC3)	34 to 41	KBI1 7-0 (PTA7-0)
12 to 19	AD1P 0-7 (PTB0-7)	42 to 45	PTC 7-4
20	ADC Ref. H	46	UART1 TxD (PTE0)
21	ADC Ref. L	47	UART1 RxD (PTE1)
23 / 24	Vcc	48	GPIO5
25 / 26	32 kHz Xtal	49	GPIO6
		50	GPIO7
		53 to 54	GND
		55	50 Ohm RF

Parameter	Value	Condition / Note
Receiver Sensitivity	-102 dBm typ.	for 1% packet error rate
Output Power	19 dBm	typical
Power Supply	2.7 V to 3.3 V	single supply, 3.0 V typ.
Power Control Range	30 dB	
Maximum Data Rate	250kbps	over the air
Current Consumption	receive mode: 53 mA typ. transmit mode: 210 mA typ. idle mode: 1.6 mA typ. standby mode: 36.3 µA typ. sleep mode: 2,2 µA typ. off mode: 0,55 µA typ.	@output power max no CLKO
Operating Temperature Range	-40°C to +85°C	

Notes:

All parameters are valid for V_{DD} = 3.0V and T_{amb} = 25°C.

Software from E-Senza Technologies GmbH and Synapse Wireless Inc. will run on this module, to create a wireless mesh network.

Freescale's MC13213 is included in the module and Mode Definitions and Transition Times for saving battery life can be seen in the data sheet MC1321x.

Also a pin compatible non-PA/LNA version (PAN4561L) and a pin compatible version with reduced output power (PAN4561M) are available.